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21254	7590	12/11/2006	EXAMINER	
MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			MURPHY, DILLON J	
		ART UNIT	PAPER NUMBER	
			2625	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/942,995	TOKUNAGA ET AL.
	Examiner Dillon J. Murphy	Art Unit 2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 29 September 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20, 22 and 23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 23 is/are allowed.

6) Claim(s) 1-7, 13-20 and 22 is/are rejected.

7) Claim(s) 8-12 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____

5) Notice of Informal Patent Application

6) Other: _____

DETAILED ACTION

- This action is responsive to the amendment filed on September 29, 2006.
- Claims 1-20, 22, and 23 are pending. Claim 21 is canceled.

Allowable Subject Matter

Claim 23 is allowed.

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach, disclose, or suggest the claimed limitations of (in combination with all other limitations in the claim), an invisible information recording method wherein the pixels are each so sized to be invisible to the naked eye and an image density is 0.1 or less, as claimed in claim 8. Similar features are found in claim 23. Therefore, claim 23 is allowable over the prior art for the same reasons.

Claims 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach, disclose, or suggest the claimed limitations of (in combination with all other limitations in the claim), 16 image forming

elements is a recording unit used as a representative point for invisible information recording, as claimed in claim 9.

Claims 10-12 are inherently allowable for depending on an allowable base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 13, 14, 18-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630) in view of Ur (US 5568550).

Regarding claim 1, Zhang teaches an invisible information recording method comprising:

Extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image, which is visible to the naked eye (Zhang, fig 1, print control symbol #214 separate from informational content #210. Informational content is visible to the naked eye), of said page image of said sheet of paper (Zhang, col 4, ln 53-60, wherein blank portions of document are extracted from page, with location separated from the informational content of the printed matter, col 3, ln 53-60); and

Recording a digital image on said location of said at least one blank area on said sheet of paper (Zhang, fig 1, print control symbol #214 which reads on a digital image, is recorded in said location on the page);

Wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to the naked eye (Zhang, col 3, ln 25-32, wherein information is sized such that it is not apparent to a viewer, and col 4, ln 54-60, wherein information is preferably invisible to the naked eye).

Zhang does not disclose expressly an invisible information recording method wherein said extracting comprises extracting a plurality of locations of blank areas from said page image of said sheet of paper.

Ur, however, teaches reproducing invisible information in a plurality of locations on a page image of a sheet of paper (Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. Additionally see, in col 3, ln 61-66 and col 4, ln 13-15, wherein in the exemplary document the invisible information is printed in the margins of a document. Document margins are inherently blank locations on a page, implying the method of Ur involves at least some recognition of white space of a document). Combining the teaching of Ur disclosing recording invisible information in a plurality of locations with the teaching of Zhang disclosing positively extracting a blank location of a page for invisible information recording teaches the limitation of extracting a plurality of locations of blank areas from said page image of said sheet of paper.

Zhang and Ur are combinable because they are from a similar field of endeavor of recording invisible information on a page. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Ur teaching recording the invisible information in a plurality of location on a page with the method of Zhang comprising extracting a blank location from a page and recording an invisible digital image in the blank location in order to provide a system of extracting and recording a plurality of invisible images in plural blank locations on a page. The motivation for doing so would have been to print the invisible information in a plurality of locations to provide for redundancies in the event of a printer "smear," and to reduce the likelihood of annotations from obscuring the invisible information (Ur, col 2, In 20-30). Additionally, both Zhang and Ur are both directed to precisely the same problem, which is encoding information readable only by a machine without degrading the quality of the printed matter on the document. Therefore, it would have been obvious to combine Ur with Zhang to obtain the invention as specified in claim 1.

Regarding claim 2, which depends from claim 1, the combination of Zhang and Ur teaches a method wherein each of the pixels so sized as to be invisible to the naked eye is 75 micrometers or less in diameter (Zhang, col 4, In 1-21, pixels may be sized as small as 0.025 mm, i.e. 25 micrometers).

With regard to claim 3, which depends from claim 2, the combination of Zhang and Ur teaches further that each of the pixels so sized as to be invisible to the naked eye corresponds to one or a plurality of image forming elements used for a device for forming a digital image (Zhang, col 4, In 1-21, wherein bit characters, sized to be

invisible, correspond to the digital image. Also see fig 1, bit characters #216 are used for a device for forming a digital image).

With regard to claim 13, which depends from claim 1, the combination of Zhang and Ur teaches a method wherein such information formed by coarsely distributing the pixels each so sized as to be invisible to the naked eye so as to have a print density invisible to the naked eye is recorded into a plurality of locations on one page of a digital image (Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. The invisible information is replicated, col 4, ln 6-8, which reads on recording the information into a plurality of locations on one page).

With regard to claim 14, the combination of Zhang and Ur teaches a recording apparatus for recording invisible information on a sheet of paper according to any one of claims 1 to 11 (Zhang, col 15, ln 40-48, and fig 6, printers #348, wherein printers are described and shown for imprinting invisible information on printed matter).

Regarding claim 18, which depends from claim 1, the combination of Zhang and Ur teaches an invisible information recording method wherein said recording the digital image comprises recording the digital image only in one of said plurality of blank areas of said page image of said sheet of paper (Zhang, col 4, ln 53-60, wherein area allocated for printing invisible information is spatially separated from the informational content of the printed matter, i.e. the invisible information is printed only in a blank area of the page. Zhang teaches only one instance of invisible information recording per page).

Regarding claim 19, which depends from claim 1, the combination of Zhang and Ur teaches an invisible information recording method wherein said information comprises at least one of a horizontal arrangement and a vertical arrangement in said plurality of blank area of said page image of said sheet of paper (Zhang, col 10, ln 61-64, wherein the invisible information may be encoded in a rectangular M x N fashion, allowing for both horizontal or vertical arrangement. See also Table III of Zhang, col 11, wherein various horizontal and vertical arrangements are shown. Also see fig 3 of Ur teaching a horizontal and vertical arrangement in the blank area).

Regarding claim 20, which depend from claim 1, the combination of Zhang and Ur teaches an invisible information recording method wherein said extracting comprises extracting a plurality of substantially rectangular blank areas from said page image of said sheet of paper (Zhang, col 4, ln 53-60, wherein a blank location is extracted from document to be printed on. Also see col 10, ln 61-64, wherein the invisible information may be encoded in a rectangular M x N fashion, allowing for both horizontal or vertical arrangement. See also Table III of Zhang, col 11, wherein various horizontal and vertical arrangements are shown. Extracting a location is inherent to the recording method as taught by Zhang. See also col 14, ln 37-40, wherein rectangular areas are extracted and printed on. See Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. Additionally see, in col 3, ln 61-66 and col 4, ln 13-15, wherein in the exemplary document the invisible information is printed in the margins of a document. Document margins are inherently blank locations on a page,

implying the method of Ur involves at least some recognition of white space of a document).

Regarding claim 22, which depends from claim 1, the combination of Zhang and Ur teaches an invisible information recording method wherein said recording the digital signal comprises recording a copy of at least a portion of said information into the at least one other location of said plurality of locations of said blank areas (Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. The invisible information is replicated, col 4, ln 6-8, which reads on recording the information into a plurality of locations on one page).

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630) in view of Ur (US 5568550) and further in view of Gasper et al. (U.S. 5,919,730).

Regarding claim 4, which depends from claim 1, the combination of Zhang and Ur teaches an invisible information recording method comprising extracting a plurality of locations of a page and recording a digital image wherein said digital image is invisible to the naked eye. The combination of Zhang and Ur does not disclose expressly wherein each of the pixels so sized as to be invisible to the naked eye is printed using a yellow color developer. Gasper, however, teaches a method wherein each of the pixels so sized as to be invisible to the naked eye is printed using a yellow color developer (Gasper, col 7, ln 61-66, preferred color of pixels to be yellow in color).

Zhang, Ur and Gasper are combinable because they are from a similar field of endeavor of recording information on a page such that it is impossible for a casual observer to detect the information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine method of Gasper comprising recording invisible information with yellow color developer with the with the invisible information recording method Zhang and Ur comprising extracting a blank area from a document separate from a visible image and recording an invisible digital image in said location, wherein extracting comprises extracting a plurality of blank locations. The motivation for doing so would have been to maintain the high quality and utility of the document (Gasper, column 3, lines 59-62), as well as to encode information concerning the printed matter, such as sequencing information (Zhang, col 3, In 59-62). Additionally, it is well known in the art that the use of yellow ink in lieu of black ink reduces the prominence of the printed information making the information more robustly invisible. Therefore, it would have been obvious to combine Gasper with Zhang and Ur to obtain the invention as specified in claim 4.

With regard to claim 5, the combination of Zhang, Ur and Gasper teaches the yellow color developer is formed of ink or toner (Gasper, col 9, In 19-21).

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630) in view of Ur (US 5568550) and further in view of Yano et al. (U.S. 6,035,308).

Regarding claim 6, which depends from claim 1, and claim 7, which depends from claim 6, the combination of Zhang and Ur teaches an invisible information

recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein extracting comprises extracting a plurality of locations, and wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to a naked eye, as explained above in the rejection of claim 1. The combination of Zhang and Ur does not disclose expressly an invisible information recording method wherein the invisible information is printed using an ultraviolet rays color developer, ink or toner. Regarding claim 6, Yano teaches the embedding of information in a document using an ultraviolet color rays developer, and regarding claim 7, Yano teaches the specific use of ink or toner (Yano, col 33, ln 53-63).

Zhang, Ur and Yano are combinable because they are from the same field of endeavor of printing and embedding information on a page and linking the embedded information. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Zhang and Ur to include the use of an ultraviolet color rays developer, ink or toner as suggested by Yano in order to increase the quantity of information stored within a document without restriction due to character size, or without displeasing the reader (Yano, col 3, ln 39-44). Therefore, it would have been obvious to combine Yano with the combination of Zhang and Ur to obtain the invention as specified in claims 6 and 7.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boswell (U.S. 5,559,933) in view of Zhang et al. (US 6354630) and further in view of Ur (US 5568550).

Regarding claim 15, Boswell teaches an archiving printer capable of printing a document and storing and reprinting the document as document data in an archive (Boswell, column 5, lines 1-4). The printing system taught by Boswell further teaches a recording section for recording archive management information on a document (Boswell, column 5, lines 13-22). Boswell also teaches a knowing section for knowing the archive management information on the printed document (Boswell, column 25, lines 34-42). Boswell does not disclose expressly a printing system for printing information in a state that is invisible to the human eye, Boswell does not teach a blank area extracting section that extracts a location of at least one blank area in a page image of a document, wherein said location of said blank areas are different from location of a visible image, Boswell does not teach a reading section for reading out the information being recorded in an invisible manner, and Boswell does not teach extracting a plurality of locations of blank areas in a page image in a document.

Zhang, however, teaches a printing system comprising a blank area extraction section that extracts a location of at least one blank area in a page image of a document (Zhang, fig 1, print control symbol #214 separate from informational content #210. Informational content is visible to the naked eye. Print control symbol is invisible to naked eye, col 4, ln 58-60), wherein said location of said blank areas are different from location of a visible image (Zhang, col 4, ln 53-60, wherein blank portions of document

are extracted from page, with location separated from the informational content of the printed matter). Zhang also teaches a reading section capable of reading the invisible information being recorded (Zhang, col 16, ln 19-33, reading invisible information being recorded).

Boswell and Zhang are combinable because they are from the same field of endeavor, namely printing systems and archiving information for reprinting. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the blank area extraction section to record invisible information as well as the reading section from Zhang to read the information recorded in the invisible manner with the printing system recording the archive management information taught by Boswell. The motivation for doing so would have been to control when, where, and how print files are to be printed (Boswell, column 4, lines 26-28), to encode information concerning the printed matter, such as sequencing information (Zhang, col 3, ln 59-62).

The combination of Boswell and Zhang teaches a printing system comprising a blank area extracting section, a recording section, a reading section, and a knowing section. The combination of Boswell and Zhang does not disclose expressly a printing system wherein said extracting comprises extracting a plurality of locations of blank areas from said page image of said sheet of paper.

Ur, however, teaches reproducing invisible information in a plurality of locations on a page image of a sheet of paper (Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. Additionally see, in col 3, ln 61-66 and col 4, ln

13-15, wherein in the exemplary document the invisible information is printed in the margins of a document. Document margins are inherently blank locations on a page, implying the method of Ur involves at least some recognition of white space of a document). Combining the teaching of Ur disclosing recording invisible information in a plurality of locations with the teaching of Zhang disclosing positively extracting blank location of a page for invisible information recording teaches the limitation of extracting a plurality of locations of blank areas from said page image of said sheet of paper and a blank area extracting section that performs the extracting steps.

Boswell, Zhang, and Ur are combinable because they are from a similar field of endeavor of printing systems and recording additional data with the document in order to further identify the documents. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the system of Ur teaching reproducing invisible information in a plurality of locations on a page image of a sheet of paper with the system of Boswell and Zhang comprising a blank area extracting section, a recording section, a reading section, and a knowing section in order to provide an extracting section capable of extracting a plurality of blank locations. The motivation for doing so would have been to extract a plurality of blank locations in order to print the invisible information in a plurality of locations to provide for redundancies in the event of a printer "smear," and to reduce the likelihood of annotations from obscuring the invisible information (Ur, col 2, ln 20-30). Therefore, it would have been obvious to combine Ur with the combination of Zhang and Boswell to obtain the invention as specified in claim 15.

Regarding claims 16 and 17, which depend from claim 15, respectively, the combination of Boswell and Zhang teaches a printing system wherein the recording section records and embeds the archive management information of the document at the time of printing the document (Zhang, col 4, ln 39-43, wherein invisible archive management is embedded at time of printing the document) in a state that the information is invisible to the human eye or needs a careful watching to see the information (Zhang, col 4, ln 58-60, invisible information);

The recording section records one and the same information into said plurality of locations of blank areas (Ur, fig 2, wherein invisible information is recorded in plural locations 27₁, 27₂, and 27₅, for example. See col 4, ln 3-5 for plural locations. Information is invisible, col 3, ln 51-55. The invisible information is replicated, col 4, ln 6-8, which reads on recording the information into a plurality of locations on one page); and

The reading section includes an optical scanning section for scanning at least a part of the document (Zhang, col 16, ln 12-33, reading section scans document for print control symbols. See fig 7 for scanners #120, #122, #124, and #126).

Response to Arguments

Applicant's arguments, see Remarks pages 17-21, filed September 29, 2006, with respect to the rejection(s) of claim(s) 1-3, 13, 14, and 18-22 under 35 U.S.C. 102e have been fully considered and are persuasive. Therefore, the rejection has been

withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ur (US 5568550).

Applicant's arguments, see Remarks, filed September 29, 2006, with respect to claims 8 and 23, are considered moot in view of the indicated allowable subject matter as described above as reasons for allowance.

Applicant's arguments filed February 23, 2006 have been fully considered but they are not persuasive. On pages 22-24, Applicant argues that Ur does not teach the step of extracting a plurality of locations of blank areas. While the examiner concedes the Ur does not disclose a positive step of extracting a plurality of blank locations, Ur does recite the method of recording invisible information in a plurality of blank locations on a page. When combined with the extracting step of Zhang, the combination teaches the positive step of extracting a plurality of locations for recording invisible information. Ur recognizes the need in the art to print invisible information in blank locations. In Ur, the method used to assure the information is printed in a blank is similar to using a shotgun to hit a target. In col 4, ln 5-19, a plurality of patterns are produced on the page in hopes of being located in a blank location. Ur acknowledges this method provides no guarantee that any area on the document will always be free of selected matter, col 4, ln 1-2, and thus there is no guarantee that the pattern will be produced in a blank location. It is clear that a method such as provided by Zhang of positively extracting a blank location would provide the guarantee that the invisible information will be printed on a blank location on a page, while including a plurality of printing locations improves the reliability as proposed by Ur. Zhang teaches extracting a plurality of locations to print

the print control symbol in col 4, ln 53-60, while Ur teaches printing a plurality of patterns of invisible information on a single page, as seen in fig 2. Thus, Zhang and Ur are combinable and the combination teaches the positive step of extracting a plurality of locations of blank areas from a page image of a sheet of paper, as claimed in claim 1 and 15.

Regarding claims 4 and 5:

On page 21-26 of Remarks filed September 29, 2006, Applicant argues Gasper teaches away from Zhang. The examiner respectfully disagrees, noting that Gasper is not used to teach the distribution of the invisible information recording elements, but merely the use of yellow ink or toner. Zhang and Gasper are directed towards the same goal of encoding information readable only by a machine without degrading the quality of the printed matter on the documents. Thus, the combination of Zhang and Gasper is proper.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's arguments with respect to claims 6 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments, see Remarks, filed September 29, 2006, with respect to claims 9-12 have been fully considered and are persuasive. The rejection of these claims has been withdrawn.

Applicant's arguments, see Remarks page 28, filed September 29, 2006, with respect to the rejection(s) of claim(s) 15 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ur (US 5568550).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon J. Murphy whose telephone number is (571) 272-5945. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571) 272-7471. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



DJM
December 6, 2006



K. Williams
KAREN WILLIAMS
SUPERVISORY PATENT EXAMINER